

**Evidence Based Care for Patients with Heart Failure:**  
**This guide is designed to facilitate care for patients with**  
**Heart Failure (HF)**

**It is designed so that when a nurse or facility needs information to guide their care for their patients, they have rapid access to the current medical and nursing science at their fingertips.**

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# **HEART FAILURE NURSE'S GUIDE**

The Heart Failure Nurse's Guide (HFNG) is a reference and guide for nurses caring for patients with heart failure (HF) in skilled nursing facilities (SNF) or long-term care facilities (LTC). The HFNG incorporates recommendations from the 2013 and 2017 guidelines issued by the American College of Cardiology Foundation (ACCF), the American Heart Association (AHA), and the Heart Failure Society of America (HFSA). This guide is designed to be a flexible, concise, and foundational resource for developing care plans, as well as an orientation tool for nurses and other healthcare personnel involved in the care of these complex patients in SNF or LTC.

The HFNG encompasses the comprehensive management of HF patients including medications, devices, and recommendations for end-of-life care including palliative and hospice care. The guide is divided into content-specific sections with references at the end of each section that may be downloaded for real-time use. Written by nurses experienced in caring for HF patients, each self-contained section allows rapid access to information that may be needed urgently by clinicians.

## **Facts about HF in SNF/LTC**

- HF is a complex clinical syndrome with far-reaching implications for the nurse caring for these patients in SNF/LTC settings.
- HF is the leading cause of hospitalization among Americans aged >65 and almost a quarter of elderly Medicare beneficiaries with HF are discharged to SNF/LTCs.
- The nurse working in SNF/LTC needs knowledge of HF-specific disease processes in order to respond promptly to active or new HF symptoms.
- HF protocols should be incorporated into SNF/LTC regulations and care decisions.

## Specific HF Knowledge for Clinical Management of Patients in SNF/LTC

A *proactive* system of care can prevent patient decompensation and hospital readmission. Additionally, use of guideline-directed care in this HFNG guide can allow nurses to help

- Improve patients' symptoms and physical function,
- Decrease acute care utilization,
- Augment rehabilitation efforts,
- Improve cognition and mood, and
- Address depression and anxiety frequently encountered by these patients and their families.

This guide includes the following six sections:

- Section 1: Goals for Managing HF patients in SNF/LTC Settings;
- Section 2: Comprehensive Care of HF Patients in SNF/LTC Settings;
- Section 3: Pharmacologic Management of HF;
- Section 4: Caring for HF Patients with Implantable Cardiac Devices;
- Section 5: Care Transitions and End-of-Life Issues for HF Patients; and
- Section 6: Palliative Care for HF Patients.

### ABBREVIATION LIST

<b>Term</b>	<b>Abbreviation</b>
Activities of daily living	ADL
Acute coronary syndrome	ACS
Angiotensin converting enzyme inhibitor	ACE inhibitor
Angiotensin receptor blocker	ARB
American College of Cardiology Foundation	ACCF
American Heart Association	AHA
Angiotensin Receptor-Nepriylsin Inhibitors	ARNi
Anti-tachycardia pacing therapy	ATPT
Atrial fibrillation	AF
Biventricular ICD	CRT-D
Brain natriuretic peptide	BNP

Cardiac resynchronization therapy	CRT
Cardiac resynchronization therapy pacemaker	CRT-P
Chronic kidney disease	CKD
Chronic obstructive pulmonary disease	COPD
Chronic resynchronization therapy	CRT
Coronary artery bypass surgery	CABG
Congestive heart failure	CHF
Durable Power of Attorney for Healthcare	DPOA-HC
Ejection fraction	EF
Goals of care	GOC
Guideline-directed medical therapy	GDMT
End of life	EOL
Heart failure	HF
Heart Failure Nurse's Guide	HFNG
Heart Failure Society of America	HFSA
HF with preserved ejection fraction or diastolic dysfunction	HFpEF
HF with reduced ejection fraction or systolic dysfunction	HFrEF
Implantable cardioverter-defibrillator	ICD
Interventions to Reduce Acute Care Transfers	INTERACT
Left ventricular	LV
Left ventricular assist device	LVAD
Left ventricular ejection fraction	LVEF
Left ventricular hypertrophy	LVH
Long-term care facilities	LTC
Medical administration records	MAR
Minimum data set	MDS
Nasal cannula	NC
New York Heart Association	NYHA
Non-ST elevation myocardial infarction	NSTEMI
Novel oral anticoagulants	NOAC
Palliative care	PC
Percutaneous coronary intervention	PCI
Percutaneous transluminal coronary angioplasty	PTCA
Physician order for life-sustaining treatments	POLST
Prothrombin time and international normalized ratio	PT/INR
Pulsatility index	PI
Quality of life	QOL
Radar Technology by Sensible	ReDS
Situation–Background–Assessment–Recommendation	SBAR
Skilled nursing facilities	SNF

ST elevation myocardial infarction	STEMI
Subcutaneous ICD	<i>S-ICD</i>
Sudden cardiac death	SCD
Surprise question	SQ
Ventricular fibrillation	VF
Ventricular tachycardia	VT
Wearable cardioverter defibrillator	WCD

## SECTION 1

### GOALS FOR MANAGING HF PATIENTS IN SNF/LTC SETTINGS

This section addresses the key components nurses need to know to provide high quality, evidence-based care for patients with HF in SNF/LTC.

#### Multidisciplinary Services

The particular members of the rehabilitation team and their roles in HF care are not identified explicitly in the literature and may vary by facility. However, the goals of rehabilitation and health-and exercise-promotion activities that are supported by the literature are included here.

#### Rehabilitation Recommendations (Physical, Occupational, and Speech Therapy)

- Exercise should be encouraged in stable HF patients within the limits of the disease severity.<sup>1,2</sup>
- Patient should be encouraged to carry out ADL and leisure activities that do not induce HF symptoms.<sup>1</sup>
- In clinically stable HF patients, cardiac rehabilitation can be useful for improving functional capacity, exercise duration, QOL, and mortality.<sup>2</sup>
- Aerobic and strength training can help improve patients' functional outcomes.<sup>3-6</sup>
- Therapy must be ordered by a physician or nurse practitioner and delivered by a physical, occupational, or speech therapist.<sup>4</sup>
- Focus on lower extremity strength and balance exercises to minimize fall risk.<sup>6</sup>
- Core components of cardiac rehabilitation are individualized and can include the following secondary prevention programs:<sup>2</sup>
  - Patient assessment,
  - Nutritional counseling,
  - Weight management,
  - Blood pressure management,
  - Lipid management,
  - Diabetes management,
  - Smoking cessation,

- Psychosocial management,
- Physical activity counseling, and
- Exercise training.

### **Exercise Training**

Regular exercise and exercise training are Class IA recommendations for patients who are able to participate in these activities. Exercise should be encouraged in patients with HF who are stable within the confines of their disease severity. The patient should be encouraged to carry out ADL and leisure activities that do not induce HF symptoms. Following are contraindications to exercise in HF patients:<sup>4-8</sup>

- Progressive worsening of exercise tolerance or dyspnea at rest over three to five days;
- Uncontrolled diabetes;
- Significant ischemia during low-intensity exercise;
- Recent embolism;
- Thrombophlebitis;
- New-onset AF or atrial flutter;
- Reduction or worsening in NYHA functional class:
  - stage 1–no physical activity limitation,
  - stage 2–slight physical activity limitation,
  - stage 3–marked physical activity limitation, and
  - stage 4–symptoms at rest);
- Recent ACS; within two days;
- Acute systemic illness or fever;
- Severe COPD;
- Symptomatic aortic stenosis;
- Concurrent, continuous, or intermittent dobutamine therapy; or
- Decrease in systolic blood pressure with exercise.

### **Dietary Guidelines**

- The facility must provide each patient a nourishing, palatable, well-balanced diet that meets daily nutritional and special dietary needs.<sup>9</sup>

- Monitor the use of sodium-restricted diets.<sup>3,5</sup>
- Meals should be offered at least three times daily at regularly-scheduled times; snacks also may be offered.<sup>9</sup>
- Care should be taken to serve food attractively, at the proper temperature, and in a form that meets individual patient's needs.<sup>9</sup>
- Meals should be prepared to meet national dietary standards as well as the patient's nutritional/caloric needs.<sup>9</sup>
- Menus should be planned with consideration of the patient's cultural background and food habits.<sup>9</sup>
- Encourage intake of fresh foods, fruits, and vegetables.<sup>9</sup>

### **Physician Guidelines**

- The primary care physician and medical director should be involved in the care of HF patients.<sup>10,11</sup>
- The physician works effectively as part of an interdisciplinary team.
- The physician assesses each patient comprehensively, assists in care plan development, and assesses patients' progression toward goals.

### **Nurse Guidelines**

With nurses comprising the largest discipline of providers in a SNF/LTC, they provide the majority of care for these patients. They are tasked with:

- Monitoring patients for HF signs and symptoms, daily weights, and diuretic use;<sup>3</sup>
- Providing HF education to patients and their families and caregivers; and
- Receiving regular education regarding HF assessment, monitoring, and patient management.<sup>11</sup>

### **Recovering Independent Baseline Function and Functional Status**

Every patient should have an evidence-based care plan that includes disease management goals, strategies for effective management of comorbid conditions, timely follow up with the healthcare team, and appropriate dietary and physical activity guidelines. The care plan should be updated regularly and made available to all members of the patient's healthcare team.<sup>2</sup> Patient

management goals should match the plan for continuing health care of a patient following discharge from a given health care facility (e.g., rehabilitation, uncertain prognosis, and LTC).<sup>8</sup>

### **Vaccinations**

- Vaccinations recommended to prevent respiratory infections may be detrimental to HF patients and result in hospitalization. Guidelines do not currently recommend vaccination; however, recent evidence suggests that influenza vaccine is helpful in reducing all cause and cardiovascular death.<sup>1,12, 19</sup>
- Influenza vaccines should be given to HF patients every fall, when not contraindicated such as severe life-threatening allergies to flu vaccine or any ingredient in the vaccine (gelatin, antibiotics).<sup>19</sup>
- Pneumococcal vaccines should be given as recommended based on current Centers for Disease Control and Prevention recommendations, if not contraindicated.<sup>8</sup>

<https://www.cdc.gov/vaccines/adults/rec-vac/health-conditions/heart-disease.html>

### **Smoking Cessation**

- Smoking should always be discouraged.
- Nicotine has vasoconstrictor activity that can worsen hemodynamics.
- Transdermal nicotine preparations do not appear to increase cardiovascular risk but require medical monitoring.<sup>1,2</sup>
- To be effective, smoking cessation interventions should include more than one component (e.g., education, behavior change, motivation, and medications).<sup>13</sup>

### **Falls Assessment and Prevention**

Few fall prevention guidelines specifically for HF patients are available.

- Use of evidence-based fall risk assessment tools that are validated for SNF/LTC are difficult to find.<sup>16,20</sup>
- Identify fall risk factors at all levels (individual, organizational, and economic), consider psychological factors such as fear of falling and self-imposed activity restrictions, and intervene.<sup>8,15</sup>

- Because all SNF /LTC patients should be considered a fall risk, each must have adequate supervision and assistance to prevent accidents and injuries.<sup>8</sup>
- Avoid letting patients have a low heart rate or a BP <120.<sup>8,12</sup>

## Dental Care

Few dental care guidelines specifically for HF patients are available.

- Encourage and assist patient with routine dental care.<sup>5, 8</sup>
- Nurses need to work to overcome barriers to dental care including receiving education and skills training about oral care and methods to manage patient behaviors.<sup>17,18</sup>

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## **SECTION 2**

### **COMPREHENSIVE CARE OF HF PATIENTS IN SNF/LTC SETTINGS**

Current guidelines from the AACF, the AHA, and the HFSA provide direction for setting HF care priorities and managing the disease. These guidelines focus on symptom assessment and recognition, management of worsening symptoms, risk stratification, weight monitoring, medication regimens, medication adherence, patient engagement, patient education, and promoting lifestyle modifications.<sup>1</sup>

With approximately 45% of patients in SNF/LTC having HF,<sup>2</sup> recognizing early HF signs and symptoms is crucial to providing high-quality care. Proactive and prompt recognition and action by the HF nurse can prevent undue pain and suffering, clinical decompensation, and hospital readmission.<sup>3</sup> Furthermore, patients with a history of or a potential for developing HF should be identified upon admission to the SNF/LTC.<sup>4-7</sup>

#### **HF Diagnoses**

Patients with HF commonly have one or more of the following diagnoses:

- HF with preserved ejection fraction or diastolic dysfunction (HFpEF),
- HF with reduced ejection fraction or systolic dysfunction (HFrEF),
- Congestive heart failure (CHF),
- Left ventricular (LV) dysfunction,
- Structural heart disease, or
- Cardiomyopathy (ischemic or non-ischemic).

## HF Indicators

Following is a list of other potential indicators for HF that may appear in patients' charts or transfer summaries:

- Left ventricular hypertrophy (LVH),
- AF,
- Family history of sudden cardiac death (SCD),
- History of heart transplantation,
- Presence of left ventricular assist device (LVAD),
- Structural heart defects,
- Rheumatic fever or valvular heart disease,
- Coronary artery bypass surgery (CABG),
- Valvular heart surgery,
- Myocardial infarction (MI),
- Non-ST elevation myocardial infarction (NSTEMI),
- ST elevation myocardial infarction (STEMI),
- Percutaneous coronary intervention/cardiac stent (PCI),
- Hypertension,
- Presence of a permanent pacemaker (PPM), Internal cardiac defibrillator (ICD) with or without chronic resynchronization therapy (CRT) or an external defibrillator vest,
- Chronic kidney disease (CKD),
- Hypothyroidism,
- Chronic obstructive pulmonary disease (COPD),
- Alcohol or polysubstance abuse,
- Viral myocarditis,
- Chemotherapy, or
- Anemia.

### **HF Minimum Data Set**

Following is the common Minimum Data Set (MDS) for coding:<sup>8</sup>

- G0110J1: Functional Status – Activities of Daily Living (ADL),
- I0600: Active Diagnosis – Last 7 Days – Heart/Circulation – Heart Failure,
- I0700: Active Diagnosis – Last 7 Days – Heart/Circulation – Hypertension,
- I0800: Active Diagnosis – Last 7 Days – Heart/Circulation – Orthostatic Hypotension,
- J1100A: Health Conditions – Shortness of Breath – With Exertion,
- J1100B: Health Conditions – Shortness of Breath – Sitting at Rest,
- J1100C: Health Conditions – Shortness of Breath – Lying Flat, and
- N0410G: Medications – Medications Received – Diuretic.

### **Assessing HF Symptoms<sup>7</sup>**

Following is a list of symptoms to look for when assessing patients for HF:

- Acute delirium and confusion;
- Anorexia, nausea, abdominal pain, or abdominal distension;
- Anxiety or irritability;
- Chest discomfort, pressure, or heaviness;
- Cough, especially at night;
- Decrease in exercise tolerance, functional status, undue fatigue, or weakness;
- Dyspnea on exertion or at rest;
- Early satiety;
- Excessive thirst;
- Orthopnea (inability to sleep or lie down without dyspnea); or
- Paroxysmal nocturnal dyspnea (awakened during sleep with dyspnea).

### Assessing HF signs

Following are physical findings that require prompt evaluation, attention, or intervention.

- Hypoxia as evidenced by decreased O<sub>2</sub> saturation from baseline.
- New onset irregular heart beat
- Jugular vein distention
- Orthostatic hypotension or sudden drop in blood pressure
- Worse than usual peripheral edema
- New or worse right upper quadrant tenderness or abdominal distention
- Signs of decreased cardiac output
  - Cold or cool upper and/or lower extremities
  - Confusion (inability to concentrate or mentate)
  - Cyanosis
  - Hypotension
  - Lethargy (extreme fatigue)
  - Narrow pulse pressure (subtract diastolic blood pressure from systolic blood pressure, <40 mm Hg)
  - Poor urinary output
  - Slow capillary refill
- Tachycardia at rest
- Weight gain signaling centralized edema (over 3 pounds in 24 hours)
- Wet lung sounds (crackles, rales)
- Worsening heart murmurs

## **HF Risk Stratification<sup>1</sup>**

Patients should be stratified as high risk or low risk for hospitalization. Such risk stratification can help determine the intensity of monitoring required for each HF patient.

### **High-Risk Indicators**

Patients with the following symptoms or situations may be considered high risk:

- Hospitalized in the last six months for HF exacerbation,
- Primary or secondary HF hospital discharge diagnosis,
- NYHA Class III or IV at admissions to SNF/LTC,
- Hypertensive >150/90, or
- Recent emergency department visit for HF symptoms.

### **Low-Risk Indicators**

Patients with the following situations may be considered low risk:

- Six months since last hospitalization for HF, or
- NYHA Class I or II on admission to SNF/LTC.

### **Evidence-Based Guidelines and Tools for HF Care<sup>9</sup>**

- A—N-E-W—L-E-A-F screening tool for caregivers also was included in the article link above.
- “A New Leaf” screening tool for direct caregivers.©2005, Candace C. Harrington, PhD., DNP, APRN, BC, NP-C. Permission received to reproduce for non profit purposes.
- The letters in this mnemonic device stand for
  - A=Acute agitation or anxiety,
  - N=Nighttime shortness of breath or increased nighttime urination,
  - E=Edema in lower extremities,
  - W=Weight gain (two to four pounds per week),
  - L= Lightheadedness,
  - E=Extreme shortness of breath lying down,
  - A=Abdominal symptoms (nausea, pain, decreased appetite, distension), and

- **F**=Fatigue.
- For SBAR (Situation–Background –Assessment–Recommendation)<sup>10</sup> communication, have vital signs (blood pressure, pulse, respiration, pulse oximetry, and weight trend) available when contacting the physician or advanced practice provider.

### **HF Weight Monitoring<sup>11</sup>**

Follow the recommendations below when weight monitoring HF patients.

- Baseline weight evaluation must be completed to determine euvolemic (normal amount of body fluids) state.
- Weights should be obtained on the same scale, in same clothes, in the morning, after voiding, and before breakfast.
- To identify early weight gain, monitor weights daily for high-risk patients or three times a week for low-risk patients.
- Weights should be compared to the patient’s euvolemic weight.

### **HF Medication Regimen – Education and Adherence<sup>1</sup>**

Medication reconciliation is crucial for achieving a safe patient handoff from facility to facility.

The following classes of medications are used in the HF treatment of HF:

- Aldosterone antagonists (Spironolactone, Eplerenone);
- Beta blockers (Metoprolol succinate, Carvedilol, and Bisoprolol);
- ACE inhibitors (Lisinopril, Enalapril, Fosinopril, Captopril);
- ARBs (Valsartan, Candesartan, Losartan);
- ARNI (valsartan/sacubitril) is an ARB combined with neprilysin, an enzyme that degrades natriuretic peptides, bradykinin, adrenomedullin, and other vasoactive peptides
- Digitalis (Digoxin, Lanoxin);
- Diuretics (Furosemide [Lasix], Bumetanide [Bumex], and Torsemide [Demadex]);
- Hydralazine;
- Nitrates (Isosorbide Mononitrate, Isosorbide Dinitrate, or Nitroglycerin patch or paste);  
and
- Potassium supplements

- Sinoatrial Node Modulator (Ivabradine) is a therapeutic agent that selectively inhibits the *I<sub>f</sub>* current in the sinoatrial node, providing heart rate reduction

### **Development of SNF/LTC Care Plan for HF Patients<sup>1,7,12</sup>**

Nurses and caregivers should keep the following key points in mind when developing and following a care plan for an HF patient in SNF/LTC.

- The care plan should identify the intensity and frequency of HF assessments.
- The first 30 days after hospital discharge is when patients are at highest risk for hospital readmission.
- There should be no delay in administering the prescribed HF regimen.
- Baseline weight should be obtained upon facility admission.
- All SNF/LTC staff should be involved in the HF patient's care plan.
- Routine team meetings and care planning should be conducted to reinforce and organize care policies.
- Patients' preferences, unique concerns, expectations, and values are vital components of their care plan.
- The following HF-related diagnostic findings performed in SNF/LTC may require intervention:
  - Electrolyte abnormalities (especially hyponatremia/hyperkalemia),
  - A rise in BUN/creatinine,
  - Radiologic findings of pulmonary congestion,
  - An elevated brain natriuretic peptide (BNP) that is different from prior levels,
  - Elevated Lanoxin/digoxin levels, and
  - Symptomatic tachyarrhythmias or bradyarrhythmias.

### **HF Critical Thinking and Decision-Making Points<sup>13</sup>**

Following these key points can help nurses protect the health of their HF patients.

- Verify the patient's typical vital signs and baseline weight from the discharging facility, the patient's primary care physician, and cardiology providers.
- A thorough physical examination and assessment of the patient's symptoms can guide future decision-making and allow for the best patient outcomes.

- Determine whether a change in condition can be managed at SNF/LTC facility or if it warrants transfer to an emergency department.
- Determine if, in addition to the SNF/LTC medical director, the patient's cardiologist and HF team can assist with interventions and treatment.
- Focus on preventing and promptly treating acute and new HF signs and symptoms.
- Maintain and implement evidence-based HF therapy.
- Provide prompt attention and intervention in the case of new weight gain or worsening HF signs and symptoms.
- In the case of new weight gain, an extra or double diuretic dose (ordered by a provider) can be effective at returning a patient's weight to baseline (euvolemia) if administered early.
- Evaluate weight loss, blood pressure drops, dizziness, and orthostatic blood pressures and pulses and report any signs of dehydration to a provider. Holding or decreasing diuretic may be necessary if the case of dehydration.
- Avoid holding medications based solely on vital signs, as HF patients can have low blood pressures at baseline.
- Report any changes in vital signs, including rapid or slow heart rhythms, and higher or lower blood pressures than usual.

## Evidence-based Recommendations for HF Care

### HFrEF

The ACCF and the AHA offer several evidence-based recommendations that should be tailored to each patient.<sup>1</sup> In all patients with a recent or remote history of myocardial infarction (MI) or ACS and HFrEF the following medications should be prescribed:

- ARNI (valsartan/sacubitril), an ARB combined with neprilysin, an enzyme that degrades natriuretic peptides, bradykinin, adrenomedullin, and other vasoactive peptides, if not already on an ACE inhibitor or ARB;
- ACE inhibitors to prevent symptomatic HF and reduce mortality, if not on an ARNI;
- In patients intolerant to ACE inhibitors, ARBs, unless contraindicated, and if not on an ARNI;
- Evidence-based beta blockers to reduce mortality; and
- Sinoatrial Node Modulator (Ivabradine) is a therapeutic agent that selectively inhibits the If current in the sinoatrial node, providing heart rate reduction.

In patients with structural cardiac abnormalities—including LV hypertrophy, in the absence of a history of MI or ACS—blood pressure should be controlled in accordance with clinical practice guidelines for hypertension to prevent symptomatic HF.

ARNI, ACE inhibitors, or evidence-based ARBs should be used in all patients with HFrEF to prevent symptomatic HF. For patients on these medications, nurses should

- Monitor for throat tightening, hives, or facial swelling;
- If angioedema is suspected, stop the medication and call a provider;
- Avoid potassium-based salt substitutes; and
- Advise women of childbearing age to avoid pregnancy while using ACE inhibitors.

One of three beta blockers (Bisoprolol, Carvedilol, or sustained release Metoprolol) should be used in all patients with HFrEF to prevent symptomatic HF. For patients on these medications, nurses should monitor patients for symptomatic bradycardia.

Diuretics are recommended in patients with HFrEF who have evidence of fluid retention, to improve symptoms (unless contraindicated). For patients on these medications, nurses should monitor patients' electrolytes, magnesium, blood pressure, and urinary output.

ARBs are recommended in patients with HFrEF with current or prior symptoms who are ACE inhibitor intolerant, to reduce morbidity and mortality (unless contraindicated). For patients on these medications, nurses should

- Monitor for throat tightening, hives, and facial swelling (although angioedema is not common with the use of ARBs);
- stop the medication and call a provider if angioedema is suspected;
- Avoid potassium replacement unless hypokalemia; and
- Avoid potassium-based salt substitutes.

The combination of hydralazine and long-acting nitrates (isosorbide mononitrate) or short-acting nitrates (isosorbide dinitrate) is recommended to reduce morbidity and mortality for African Americans with NYHA class III–IV HFrEF who are receiving optimal therapy with ACE inhibitors and beta blockers (unless contraindicated). This combination also can be a substitute treatment for patients who are intolerant of or unable to take ACE inhibitors or ARBs. For patients on these medications, nurses should monitor patients' blood pressure and report headaches.

To reduce morbidity and mortality, aldosterone receptor antagonists (or mineralocorticoid receptor antagonists) are recommended in patients with NYHA class II–IV HF or an LVH (LVEF) of <35%, unless contraindicated. Patients with NYHA class II HF should have a history of prior cardiovascular hospitalization or elevated plasma BNP levels to be considered for aldosterone receptor antagonists. Creatinine should be 2.5 mg/dL or less in men or 2.0 mg/dL or less in women (or estimated glomerular filtration rate >30 mL/min/1.73 m<sup>2</sup>), and potassium should be less than 5.0 mEq/L. For patients on these medications, nurses should provide careful monitoring of potassium, renal function, and diuretic (at initiation and thereafter) to minimize risk of hyperkalemia and renal insufficiency; and evaluate potassium level and renal function two weeks following dose change.

Implantable cardioverter-defibrillator (ICD) therapy is recommended for primary prevention of SCD to reduce total mortality in selected patients with non-ischemic dilated cardiomyopathy or ischemic heart disease who are at least 40 days post-MI, have an LVEF of 35% or less, are NYHA class II or III symptoms, are on chronic Guideline-Directed Medical Therapy (GDMT), and have a reasonable expectation of meaningful survival for more than one year.

Cardiac resynchronization therapy (CRT) is indicated for patients who have LVEF of 35% or less, sinus rhythm, left bundle-branch block (LBBB) with a QRS duration of 150 milliseconds or greater, NYHA Class of II, III, or ambulatory IV with symptoms on GDMT.

### **HFpEF<sup>16</sup>**

Systolic and diastolic blood pressure should be controlled in patients with HFpEF in accordance with published clinical practice guidelines to prevent morbidity.

Diuretics should be used for relief of symptoms due to volume overload in patients with HFpEF.

Management of AF according to published clinical practice guidelines in patients with HFpEF is reasonable to improve symptomatic HF.

The use of beta-blocking agents, ACE inhibitors, and ARBs in patients with hypertension is reasonable to control blood pressure in patients with HFpEF.

In appropriately selected patients with HFpEF (with EF  $\geq$ 45%, elevated BNP levels or HF admission within 1 year, estimated glomerular filtration rate  $>$ 30 mL/min, creatinine  $<$ 2.5 mg/dL, potassium  $<$ 5.0 mEq/L), aldosterone receptor antagonists might be considered to decrease hospitalizations. For patients on these medications, nurses should provide careful monitoring of potassium, renal function, and diuretic (at initiation and thereafter) to minimize risk of hyperkalemia and renal insufficiency; and evaluate potassium level and renal function two weeks following dose change.

## **HF and AF**

Patients with chronic HF and permanent/persistent/paroxysmal AF and an additional risk factor for cardioembolic stroke (history of hypertension, diabetes mellitus, previous stroke or transient ischemic attack, or  $\geq 75$  years of age) should receive chronic anticoagulant therapy. For patients on these medications, nurses should

- Monitor for bleeding, anemia, epistaxis, and hematuria;
- Follow prothrombin time and international normalized ratio (PT/INR);
- Assure proper dosing; and
- Determine facility policy for monitoring and dosing of anticoagulants.

To reduce congestive symptoms, fluid restriction (1.5 to 2 L/d) is reasonable in Stage D HF, especially in patients with hyponatremia.

To improve functional status, monitored exercise or regular physical activity is recommended as safe and effective for HF patients who are able to participate. Exercise training has multisystem benefits and improved clinical outcomes for HF patients. Subsequent risk for mortality and hospitalization is reduced with regular exercise. For patients on exercise therapy, encourage them to participate in exercise on a routine basis (i.e., walking to meals, participating in regular physical activity at the facility, and performing ADL).

### **Safety Concerns<sup>12</sup>**

HF patients are at risk for falls. Frequently assess for

- Signs of HF and fluid overload,
- Orthostatic hypotension due to antihypertensive and diuretic medications,
- Bleeding, and
- Toxicity or side effects of medications such as digitalis.

### **Dietary Concerns<sup>14</sup>**

- Patient satisfaction and the palatability of food without salt and has been an ongoing issue in SNF/LTC.
- Patients should consume less than 2,300 mg sodium per day to help prevent congestion/edema.
- Nurses should discuss and promote dietary healthy alternatives to higher sodium foods.
- Patients with hyperkalemia should avoid salt substitutes that contain potassium and may need to follow a low-potassium diet.
- Help patients avoid excessive fluid intake by offering frozen fruit or ice chips to help quench thirst.

### **Interventions for Clinical Status Changes in HF Patients<sup>5</sup>**

- When patients have new or worsening signs and symptoms—with or without a sudden weight gain above a patient's dry weight range—doubling their diuretic dose (as ordered by a physician) until their weight is back to their target weight range can prevent a hospitalization.
- When there is a drop in weight and blood pressure along with new complaints of lightheadedness, hold the diuretic until the weight is back to the target weight range.
- For additional interventions, notify facility medical provider and outside providers about changes in patients' status.
- Informing patients and their family members of ongoing issues and involving them in the care plan can promote positive behaviors that help keep patients clinically stable.

### **Transferring Care and Transitional Considerations for HF Patients<sup>13</sup>**

Send written documentation and report the following to the receiving hospital:

- Key diagnoses including EF;
- Current MAR including any recent changes to regimen;
- Changes in clinical status including symptoms and physical findings;
- Usual vital signs and baseline target weight range (euvolemic/dry weight);
- Symptom management interventions that have been attempted;
- Ongoing and/or acute symptoms or failures of treatments;

- Recent labs and diagnostics;
- Activity tolerance, exercise capacity, ADL's at time of transfer, and baseline function;
- Contact information for family (next of kin, guardian, durable power of attorney for healthcare); and
- Code status.

### **Preventing Hospital Readmission in HF Patients<sup>5</sup>**

To prevent hospital readmissions, all involved health care and family members should keep in mind the following two key points:

- SNF/LTC staff, the patient, and caregivers all should be involved in the care plan and requests for escalation of care settings; and
- Routine team meetings and care planning reinforce care plans.

### **HF Patient Education<sup>15</sup>**

- To facilitate HF self-care, patients should receive specific education about the disease process, recommended lifestyle modifications, and self-management strategies.
- Assess how each patient learns best.
- Use the teach-back method to assess patient understanding using responses and questions beginning with the following words and phrases: tell me, show me how, what, why, and when.
- Reinforce life management activities daily. Say things like, "Let's get you weighed this morning. You will need to do this at home to make sure you aren't holding onto water" and "Let's go for a short walk. You will need to walk every day."

### **Discharge Education for HF Patients Going Home**

Discharge education actually begins upon admission with confirmation of the patient's diagnosis. Give patients a personalized self-care manual that includes the following information:

- HF definition;
- Personal HF symptoms;
- Who to call when new or worsening symptoms occur;

- Medication list (including how and when to take them and what side effects to report);
- Daily weight log to record weight upon arrival home and then daily (ensure patient has a scale at home);
- Instructions about what to do when weight changes;
- Recommendations for low sodium diet (healthy meal alternatives when eating out, spices that add flavor, key food label information, daily sodium allowance, and avoidance of salt substitutes);
- Avoidance of grapefruit juice due to drug interactions;
- Activity recommendations with personalized exercise plan that includes coordination with therapists to continue and improve functioning;
- Information on follow-up appointment (ideally within 7–14 days after discharge from SNF/LTC);
- Key provider contact information;
- Care calendar;
- Tips for addressing emotional health (e.g., identifying emotional challenges and coping prior to discharge);

Before the patient is discharged, arrange for home care and additional resources in the community including exercise, support groups, transportation, grocery stores, accessibility stores, and medical equipment (e.g., motorized carts, wheelchairs, walkers, raised toilet seats, and grab bars). Be sure to include caregivers and family in life-management instructions. Finally, designate a call back clinician and arrange a phone call to take place 24–72 hours after discharge.

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**SECTION 3**  
**PHARMACOLOGIC MANAGEMENT OF HF**

The pharmacologic management of HF is complex. HFrEF and HFpEF require different medication regimens.<sup>1</sup> This section is organized by diagnosis and status, beginning with commonalities between HFrEF and HFpEF, which is followed by recommendations for each condition. Next, is a list of medications commonly used for HF patients, followed by intensive therapies for stage C HFrEF and HFpEF.

Treatment for Stage A HFrEF and HFpEF generally involves lifestyle changes such as getting regular exercise, quitting smoking, and treating high blood pressure and high cholesterol. Stage B HF is treated with the same lifestyle changes with the addition of an angiotensin converting enzyme inhibitor (ACE) or an angiotensin II receptor blocker (ARB). Beta blockade should be prescribed for everyone. Additionally, a surgical opinion should be sought if there is a structural defect that may be ameliorated by surgery.<sup>2</sup>

**Drugs Commonly Used for HFrEF (Stage C HF)<sup>2</sup>**

<b>Drug</b>	<b>Initial Daily Dose(s)</b>	<b>Maximum Doses(s)</b>
<b>ACE inhibitors</b>		
Captopril	6.25 mg TID	50 mg TID
Enalapril	2.5 mg BID	10–20 mg BID
Fosinopril	5–10 mg QD	40 mg QD
Lisinopril	2.5–5 mg QD	20-40 mg QD
Perindopril	2 mg QD	8-16 mg QD
Quinapril	5 mg BID	20 mg BID
Ramipril	1.25–2.5 mg QD	10 mg QD
Trandolapril	1 mg QD	4 mg QD
<b>ARBs</b>		
Candesartan	4–8 mg QD	32 mg QD

Losartan	25–50 mg QD	50–150 mg QD
Valsartan	2040 mg BID	160 mg BID
Angiotensin Receptor-Neprilysin Inhibitors (ARNi)		
Sacubitril/valsartan	49mg sacubitril /51mg valsartan mg BID. Therapy may be initiated at 24/26 mg BID	97 sacubitril /103 valsartan mg BID (/)
I <sub>f</sub> channel inhibitor		
Ivabradine	5 mg BID	7.5 mg BID
Aldosterone antagonists		
Spironolactone	12.5–25 mg QD	25 mg QD or BID
Eplerenone	25 mg QD	50 mg QD
Beta blockers		
Bisoprolol	1.25 mg QD	10 mg QD
Carvedilol	3.125 mg BID	50 mg BID
Carvedilol CR	10 mg QD	80 mg QD
Metoprolol succinate extended release (metoprolol CR/XL)	12.5–25 mg QD	200 mg QD
Isosorbide dinitrate and hydralazine		
Fixed-dose combination	20 mg isosorbide dinitrate/ 37.5 mg hydralazine TID	40 mg isosorbide dinitrate/ 75 mg hydralazine TID
Isosorbide dinitrate and hydralazine	20-30 mg isosorbide dinitrate/ 25-50 mg hydralazine TID or QD	40 mg isosorbide dinitrate TID with 100 mg hydralazine TID

**Note:** Erythropoietin-stimulating agents should **not** be used in patients with HF and anemia.<sup>3</sup>

## Recommended Pharmacological Treatment for Stage C HFrEF<sup>2</sup>

Recommendations	NYHA Functional Class			
	I	II	III	IV
Stage C HFrEF	GDMT; ACE-I or ARB or ARNI; Beta-blocker (bisoprolol, carvedilol, and sustained- release metoprolol succinate)			
Volume overloaded		Add loop diuretic		
If <b>male</b> with LVEF of $\leq 35\%$ and potassium $< 5.0$ mEq/L and creatinine $\leq 2.5$ mg/dL or estimated glomerular filtration rate $> 30$ mL/min/1.73 m <sup>2</sup>		Add aldosterone receptor antagonists (or mineralocorticoid receptor antagonist) *		
If <b>female</b> with LVEF of $\leq 35\%$ and potassium $< 5.0$ mEq/L and creatinine $\leq 2.0$ mg/dL or estimated glomerular filtration rate $> 30$ mL/min/1.73 m <sup>2</sup>		Add aldosterone receptor antagonists (or mineralocorticoid receptor antagonist) *		
LVEF $\leq 40\%$ , post MI with HF develop symptoms or history of diabetes mellitus	Aldosterone receptor antagonists (or mineralocorticoid receptor antagonist) *			
If African American with persistent symptoms			Add hydralazine and isosorbide dinitrate	
	Digoxin can improve symptoms			
Chronic HF with permanent/persistent/ paroxysmal AF and history of hypertension, diabetes mellitus, previous stroke or transient ischemic attack, or $\geq 75$ years of age	Chronic anticoagulant therapy (warfarin, dabigatran, apixaban, or rivaroxaban)			
Adequate BP on ACEI or ARB or no contraindications to ARB or sacubitril		Discontinue ACEI or ARB; initiate ARNI*		
Stable chronic HFrEF (LVEF $\leq 35\%$ ) receiving GDMT and in normal sinus rhythm with heart rate $\geq 70$ bpm at rest on maximally tolerated dose beta-blocker		Ivabradine		

\* Carefully monitor renal function, potassium, and diuretic dosing to minimize risk of hyperkalemia and renal insufficiency.

### Pharmacology Treatments Not Beneficial for Treating Stage C HFrEF<sup>4</sup>

- Anticoagulation is not recommended in patients without atrial fibrillation, a prior thromboembolic event, or a cardioembolic source.
- Statins are not beneficial as adjunctive therapy when prescribed solely for an HF diagnosis in the absence of other indications for their use.
- Nutritional supplements
- Hormonal therapies unless used to correct hormonal deficiencies
- Calcium channel-blocking drugs
- Routine use of nitrates or phosphodiesterase-5 (PDE-5) inhibitors to increase activity or QOL

### Pharmacological Treatments Contraindicated for Stage C HFrEF<sup>4</sup>

- Routine combined use of an ACE inhibitor, ARB, and aldosterone antagonist potentially is harmful for patients with HFrEF.
- ARNI should not be administered concomitantly with ACE inhibitors or within 36 hours of the last dose of an ACE inhibitor.
- ARNI should not be administered to patients with a history of angioedema.
- The following drugs should be avoided or withdrawn if possible: most antiarrhythmic drugs, most calcium channel-blocking drugs (except amlodipine), NSAIDs, and thiazolidinediones.
- Long-term use of infused positive inotropic drugs potentially is harmful for patients with HFrEF, except as palliation for patients with end-stage disease who cannot be stabilized with standard medical treatment (see recommendations for stage D).

### Recommended Pharmacological Treatments for Stage C HFpEF<sup>2</sup>

Symptoms	Treatment
If volume overloaded	Diuretics
If hypertensive	Beta-blockers, ACE-I, or ARB
EF $\geq$ 45%, elevated BNP levels or HF admission within 1 year, estimated glomerular filtration rate $>$ 30 mL/min, creatinine $<$ 2.5 mg/dL, and potassium $<$ 5.0 mEq/L	Aldosterone receptor antagonists might be considered to decrease hospitalizations

### Recommended Pharmacological Treatment for Stage D HFrEF or HFpEF<sup>2</sup>

<b>Recommendations</b>	<b>NYHA HF Classification</b>			
	I	I I	II I	IV
All of the above for HFrEF or HFpEF				
If in cardiogenic shock, until definitive therapy (e.g., coronary revascularization, mechanical circulatory support, heart transplantation) or resolution of the acute precipitating problem				Temporary intravenous inotropic support
If with documented severe systolic dysfunction who present with low blood pressure and significantly decreased cardiac output				Short-term, continuous intravenous inotropic support
If awaiting mechanical circulatory support (MCS) or cardiac transplantation				Continuous intravenous inotropic support
If not eligible for either MCS or cardiac transplantation, but seek symptom control				Long-term, continuous intravenous inotropic support

### **Pharmacological Treatments Contraindicated for Stage D HFrEF or HFpEF<sup>4</sup>**

For patients with Stage D HFrEF or HFpEF, long-term, continuous, or intermittent intravenous inotropic support without specific indications or not used for palliative care (PC) is contraindicated. Furthermore, continuous or intermittent intravenous inotropic support is not recommended for Stage D HFrEF or HFpEF hospitalized patients without documented severe systolic dysfunction, low blood pressure, or impaired perfusion, and evidence of significantly decreased cardiac output, with or without congestion.

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## SECTION 4

### CARING FOR HF PATIENTS WITH IMPLANTABLE CARDIAC DEVICES

Frequently, a medication regimen is not enough to stabilize the function of HF patients. As technology has improved, the use of various monitors, pacemakers, and more invasive implantable devices has increased. This section presents the devices currently used by HF patients: CardioMEMS, pacemakers, ICD devices, wearable cardioverter defibrillator (WCD), and LVADs.

#### **CardioMEMS<sup>TM1</sup>**

This device is a pressure sensor, implanted into the left pulmonary artery percutaneously via the femoral vein, which measures pulmonary artery pressure. CardioMEMS also can monitor pulmonary artery pressure remotely. This device has a low procedural complication rate and has achieved decreased readmission rates for HF patients. Generally, patients must have prior insurance approval before receiving this device.

#### **Radar Technology by Sensible (ReDS<sup>TM</sup>)<sup>2</sup>**

This wearable vest has embedded sensors to measure the amount of fluid in the lungs. The patient wears it for 90 seconds and the results are sent to Cardiology via a secure web portal. This device allows medication adjustments to be made before symptoms occur and has reduced HF readmission rates by 87%.

#### **Pacemakers<sup>3</sup>**

A pacemaker is a battery-operated device that monitors a patient's intrinsic heart rhythm and stimulates the heart with electrical impulses when the heart rate is inappropriately slow or absent. The device—implanted under the skin through a small incision usually on the patient's left chest—senses the patient's intrinsic rhythm and does not compete with it.

A CRT pacemaker (CRT-P) is a specialized pacemaker for HF patients who have intraventricular conduction delay (bundle branch block)  $\geq 120$  milliseconds and can benefit from CRT. These patients' ventricles do not contract at the same time, decreasing the amount of blood pumped by

the heart. The CRT-P works by synchronizing the pumping action of both ventricles, thereby improving symptoms.

### **Main Pacemaker Parts**

A pacemaker includes a *pulse generator* and *leads*. The pulse generator contains the battery and a tiny computer that controls the device's function. It also stores information about the patient's heart rhythm and rate. The leads are the tiny wires connecting the generator to the patient's heart. These wires have three main functions: transmitting impulses from the generator to the heart causing it to contract, producing impulses that are timed to flow at regular intervals to mimic the heart's natural pacemaker, and sensing the heart's intrinsic electrical activity (to avoid stimulating it when not needed).

### **Pacemaker Indications<sup>4</sup>**

Patients with the following conditions are candidates for pacemaker implantation:

- Sick sinus syndrome with or without tachyarrhythmias,
- Complete heart block,
- Symptomatic Mobitz II AV block, or
- Sinus bradycardia associated with significant symptoms (i.e., syncope, dizziness, or hypotension).

### **Types of Pacemakers**

Following are the three types of pacemakers:

- Single-chamber pacemakers (one implanted lead in the right ventricle),
- Dual-chamber pacemakers (two implanted leads, one in the right atrium and one in the right ventricle), and
- Biventricular pacemaker (three implanted leads, one in the right atrium, one in the right ventricle, and one in the left ventricle).

### **Pacemaker Complications**

Pacemaker procedure-related complications can include

- Infection,

- Bleeding or pocket hematoma,
- Pain,
- Pneumothorax,
- Hemothorax,
- Heart perforation,
- Lung puncture,
- Damage to adjacent structures (tendons, muscles, or nerves),
- Arrhythmias, and
- Stroke.

Pacemaker device-related complications can include

- Lead dislodgement,
- Lead fracture,
- Pacemaker-mediated tachycardia,
- Pacemaker malfunction,
- Failure to capture,
- Failure to output, and
- Oversensing or undersensing.

### **Common Pacemaker Post-Implant Instructions<sup>3</sup>**

- Avoid strenuous activities especially heavy lifting and other activities that use the upper body, as doing so promotes incision healing and allows the leads to attach firmly to the heart tissue and avoid dislodgement.
- Limit arm movements or raising the arm above shoulder level (on the side of device implant) for a few weeks, as doing so allows the leads to attach firmly to heart tissue and avoid dislodgement.
- Avoid rough contact that could result in trauma to the implant site.
- Avoid wearing tight clothing that could irritate the skin over the device.
- Keep a copy of the device card in the chart and patient's wallet at all times in case medical treatment is needed. The card should indicate the type of pacemaker generator and leads used, implantation date, and name of implanting physician. The card should be

shown to other physicians, dentists, and emergency personnel if the need for treatment arises, so they are aware of the pacemaker information.

- Call the physician if there is
  - Drainage or bleeding from the insertion site,
  - Wound dehiscence,
  - Redness and warmth around the insertion site,
  - Fever or chills,
  - Beeping sound from the device, or
  - Recurrence of symptoms experienced by patient before pacemaker implant (e.g., increased fatigue).

### **Follow-up Visits**

Regular follow-up visits are essential and should not be missed. During these visits, the implant site is assessed, and the pacemaker is checked (a process referred to as device interrogation) using a programmer. The programmer is a special computer that can communicate with the device by either placing a wand over the device or using radio frequency (RF). In between clinic visits, the patient may have remote monitoring to check the device, which can be done at the facility.

At follow-up visits, device specialists and healthcare providers can

- Review the information stored in the pacemaker generator including the patient's heart rate and rhythm;
- Evaluate and adjust the programmed device settings if necessary;
- Adjust programmable antitachycardia pacing schemes and voltage shocks; and
- Check the battery life to see how much energy is left.

### **Common Precautions**

Pacemaker patients can use a microwave, but should follow the following precautions:

- Use cell phone on the ear opposite of where the device is implanted,
- Do not put cell phone directly against the chest,
- Avoid strong electric or magnetic fields,

- Do not undergo magnetic resonance imaging (MRI) without informing physician, and
- Show card when going through airport security and do not go through the screening machine.

### **Magnet Inhibition**

When a magnet is placed over a pacemaker, it temporarily reprograms the device to deliver stimuli at a preset rate (regardless of the patient's own intrinsic rhythm), but it does **not** inhibit pacing or turn off the pacemaker. Calling the company representative for the particular device will enhance the inhibition and interrogating process. Magnets may or may not be available at the facility. Do not place a magnet over the device.

### **Implantable Cardioverter-Defibrillator (ICD) Devices<sup>4</sup>**

An ICD is a battery-operated device that senses the patient's heartbeat and delivers an electric shock if the patient's heart is in ventricular dysrhythmia. ICDs have an important role in preventing SCD, which is commonly caused by ventricular tachycardia (VT) or ventricular fibrillation (VF).

When an ICD senses the patient's heart rate to be higher than the programmed threshold, it attempts to deliver antitachycardia pacing therapy (ATP). If ATP is ineffective, the ICD then delivers defibrillation to reset the heart's electrical activity. ICDs also have back-up pacing that is helpful if bradycardia occurs.

### **Main ICD Parts**

The *pulse generator* contains the battery and a tiny computer that controls the device's function and stores information about the patient's heartbeat. The *leads* are tiny wires that conduct electrical signals between the heart and the pulse generator, monitor the heart rhythm, and deliver energy used for pacing or defibrillation.

### **ICD Types**

There are three types of ICDs: *transvenous*, *biventricular*, and *subcutaneous*. Transvenous ICDs deliver an electrical stimulus to the right atrium, then to the right ventricle, helping pace the heart

in a normal sequence. Single-chamber ICD leads are attached in the right ventricle, and dual-chamber ICD leads are attached in the right atrium and right ventricle.

*Biventricular ICDs* are a specialized ICD for HF patients who have intraventricular conduction delay ( $\geq 120$  milliseconds) and can benefit from CRT. In these patients, the ventricles do not contract at the same time (loss of synchrony), resulting in a decreased amount of blood pumped by the heart. Biventricular ICD synchronizes the pumping action of both ventricles, thus increasing the amount of blood pumped and improving symptoms. This device is composed of three leads and often is referred to as CRT-D

*Subcutaneous ICDs (S-ICD)* have the lead placed under the skin rather than through a vein into the heart. The lead has a shocking coil electrode at its tip that is tunneled from the pulse generator in the left axilla to the left parasternal margin. S-ICD senses electrical signals from the heart and deliver electric shocks when VT/VF is detected. This device cannot deliver anti-tachycardia pacing or pacing for bradycardia.

### **S-ICD Advantages**

S-ICD devices have several advantages. They

- Are an alternative for patients who are unsuitable for transvenous leads due to difficult vascular access or underlying congenital or structural cardiac abnormalities;
- Have a lower risk of systemic infection;
- Pose no risk of pneumothorax, cardiac tamponade, or vascular injury; and
- Are easier to explant as there is no extraction of fibrosed intravascular leads.

### **ICD Indications<sup>5,6</sup>**

ICDs are indicated for primary and secondary prevention of SCD. For primary prevention of SCD, ICD implantation is recommended in patients who are at high risk of life-threatening VT or VF, including those with the following conditions:

- Myocardial infarction  $>40$  days ago and LVEF of  $\leq 30\%$ ;
- Non-ischemic cardiomyopathy, NYHA functional class II–III, and LVEF  $<35\%$  despite optimized HF regimen for at least three months;

- Syncope, structural heart disease, and inducible VT or VT going to VF on electrophysiology study;
- Congenital long QT syndrome with recurrent symptoms and/or torsades de pointes despite beta blocker therapy;
- High-risk hypertrophic cardiomyopathy or arrhythmogenic right ventricular cardiomyopathy; and
- High-risk Brugada syndrome and catecholaminergic polymorphic VT.

For secondary prevention of SCD, ICD implantation is recommended in patients with prior sustained VT, VF, or SCD thought to be due to VT or VF.

### **ICD complications**

ICD procedure-related complications can include

- Infection,
- Bleeding or pocket hematoma,
- Pain,
- Pneumothorax,
- Hemothorax,
- Heart perforation,
- Lung puncture,
- Damage to adjacent structures (tendons, muscles, or nerves),
- Arrhythmias, and
- Stroke.

ICD device-related complications can include

- Lead dislodgement,
- Lead fracture,
- Inappropriate shock, and
- Failure to shock.

### **Common ICD Post-Implant Instructions<sup>5,6</sup>**

- Avoid strenuous activities especially heavy lifting and other activities that use the upper body, as doing so promotes incision healing and allows the leads to attach firmly to heart tissue and avoid dislodgement.
- Limit arm movements or raising arm above shoulder level (on the side of device implant) for a few weeks, as doing so allows the leads to attach firmly to heart tissue and avoid dislodgement.
- Avoid rough contact that could result in trauma to the implant site.
- Avoid wearing tight clothing that could irritate the skin over the device.
- Keep a copy of the device card in the chart and patient's wallet at all times in case medical treatment is needed. The card should indicate the type of pacemaker generator and leads used, implantation date, and name of implanting physician. The card should be shown to other physicians, dentists, and emergency personnel if the need for treatment arises so they are aware of the pacemaker information.
- Call the physician if there is
  - Drainage or bleeding from the insertion site,
  - Wound dehiscence,
  - Redness and warmth around the insertion site,
  - Fever or chills,
  - Beeping sound from the device, or
  - Recurrence of symptoms experienced by patient before ICD implant (e.g., palpitations or syncope).

### **Follow-up Visits**

Regular follow-up visits are essential and should not be missed. During these visits, the implant site is assessed and the pacemaker is checked (device interrogation) using a programmer. The programmer is a special computer that can communicate with the device by either placing a wand over the device or using radio frequency (RF). In between clinic visits, the patient may have remote monitoring to check the device, which can be done at the facility.

Device specialists and healthcare providers can

- Review the information stored in the generator (including the patient's heart rate and rhythm);
- Evaluate and adjust the programmed device settings if necessary;
- Adjust programmable antitachycardia pacing schemes and voltage shocks; and
- Check the battery life to see how much energy is left.

### **Common Precautions**

ICD patients can use a microwave, but should follow the following precautions:

- Use cell phone on the ear opposite of where the device is implanted,
- Do not put cell phone directly against the chest,
- Avoid strong electric or magnetic fields,
- Do not undergo magnetic resonance imaging (MRI) without informing physician, and
- Show card when going through airport security and do not go through screening machine.

### **Magnet Inhibition**

When a magnet is placed over an ICD, it inhibits the device from delivering a shock. This function is useful during procedures (e.g., cautery) to prevent the device from detecting equipment as VF and inappropriately delivering a shock.

### **Indications for ICD Deactivation<sup>7</sup>**

ICD deactivation is appropriate in the following circumstances:

- During end-of-life care (after discussion with and agreement from patient and family),
- When device is delivering inappropriate shocks,
- During resuscitation, and
- During surgical procedures that involve electrocautery.

## **Wearable Cardioverter Defibrillator (WCD)<sup>8,9</sup>**

The LifeVest<sup>®</sup> is a WCD that is used by patients who are at high risk for SCD. A WCD continuously monitors the patient for two life-threatening arrhythmias: VT and VF. When one of these arrhythmias occurs, the device delivers current to convert the patient back to sinus rhythm. The WCD has a 98% success rate after delivery of the first shock. The WCD is intended to be worn until the patient's condition improves or until a permanent treatment is established (e.g., an ICD).

### **WCD Indications**

Patients who have the following conditions and situations generally are considered for a WCD:

- A recent myocardial infarction when EF is <35%,
- An ICD explanted due to infection,
- A new diagnosis of non-ischemic cardiomyopathy,
- Been placed on a waiting list cardiac transplantation, and
- An EF reduced to <35% before and after CABG or percutaneous transluminal coronary angioplasty (PTCA).

### **WCD Components**

The WCD consists of a garment and a monitor. The garment, which can be worn under clothing, contains the electrodes and therapy pads (for defibrillation). The monitor continuously checks the patient's heart rhythm and can be worn around the waist or from a shoulder strap. When the device detects VT/VF, it alerts patients and bystanders that a pending defibrillation is set, and then delivers a shock.

### **Typical WCD Event Sequence**

When the WCD detects a life-threatening arrhythmia, the following events occur in sequence:

- The vibration alert is activated and continues throughout the sequence;
- The siren alert begins and continues throughout the sequence;
- The siren alert gets louder;

- The device announces a patient prompt stating, “Press response buttons to delay treatment” (a conscious patient is can inhibit defibrillation by pressing the patient response buttons);
- The therapy pads release a blue gel;
- Device announces a bystander prompt stating, “Bystanders, do not interfere;” and
- Up to five treatment shocks are delivered.

### **Patient, Family, and Caregiver Education**

- The device must be worn at all times except when the patient is showering or bathing.
- Patients can resume common ADL while wearing the WCD.
- Switch the battery every day and charge a spare battery while wearing the other one.
- Advise patients that if they are conscious when the vibration and siren alerts are activated, they should press the response button to stop defibrillation. Otherwise, the device assumes the patient is unconscious from VT/VF and defibrillation will be delivered.
- If the vibration/siren alerts are activated and patient is unconscious, do not interfere with delivery of defibrillation.

### **Left Ventricular Assist Device (LVAD)**

An LVAD is used for end-stage HF patients. The LVAD is a surgically implanted, battery-operated mechanical pump, which helps the left ventricle pump blood to the rest of the body.<sup>10</sup>

All caregivers must have a basic understanding of LVAD including:<sup>11</sup>

- Device placement,
- Sterile dressing change procedure,
- Driveline immobilization,
- Methods for assessing and documenting LVAD function, and
- Emergency procedures for equipment malfunction.

## **LVAD Therapy Goals**

LVADs are used with patients to increase cardiac output as well as improve end organ function, QOL, morbidity, and mortality.

## **LVAD Indications<sup>10</sup>**

The LVAD device is used for two types of therapy: bridge-to-transplant therapy and destination therapy.

- Bridge-to-transplant therapy is a life-saving therapy for patients waiting for a heart transplant. Patients use the device until a heart becomes available. In some cases, the LVAD restores the heart, eliminating the need for a transplant.
- Destination therapy is for patients who are not heart transplant candidates. These patients can receive long-term treatment with an LVAD, which can prolong and improve their lives.

## **Pump Physiology (HeartMate or Heartware devices)**

LVADs deliver continuous flow throughout the entire cardiac cycle. The flow is preload dependent, afterload sensitive, and increases as pump speed increases. With this device, patients may not have a palpable pulse, because the aortic valve may not always open.

## **Pulsatility Index (PI)**

As the left ventricle contracts and relaxes, the flow through the pump increases and decreases, adding a degree of pulsatility. The PI is the degree of this flow pulse. PI normally will decrease as the pump speed is increased and will change with patient conditions that affect stroke volume (e.g., physiologic demand, volume status, and RV function).

## **LVAD Equipment**

The LVAD has the following parts:

- LVAD device or pump (implanted in the patient),
- Driveline (connects implanted pump to system controller outside the body),
- System controller (a small computer that controls and monitors the pump system),
- Batteries and battery clips (powers the system; always use two batteries),

- Power module (supplies electrical power to the system when batteries are not in use),
- Battery charger (holds up to four batteries at a time),
- Carrying device (holster and bag), and
- Back-up equipment (second system controller and batteries with clips; should remain with the patient at all times when traveling outside the facility or home).

### **Nursing Assessment of LVAD patient**

Nurses must assess LVAD patients for

- Device parameters (monitor for variations from patients' baseline),
- Blood pressure (may not be measurable by traditional method, Doppler method is preferred),
- Goal MAP (<80 mmHg),
- LVAD flow (>3.5 liters), and
- Labs (CBC, electrolytes, BUN, and coagulation studies).

### **LVAD Daily Evaluation and Care<sup>12</sup>**

Nurses must perform the following evaluation and care procedures for LVAD patients.

- Perform system controller self-tests.
- Inspect system controller power cable connectors for dirt, grease, or damage.
- Inspect battery clip connectors for dirt, grease, or damage.
- Inspect the connector pins and sockets for dirt, grease, or damage when switching from the battery power to the power module.
- Perform a power module self-test.
- Wash the driveline exit site using the prescribed cleanser (unless instructed otherwise by provider).
- Change the exit site bandages using aseptic technique (unless instructed otherwise by provider).
- Inspect the driveline exit site for signs of infection (e.g., redness, tenderness, swelling, discharge, or a foul odor).
- Use aseptic technique to touch or handle the exit site.

## **Driveline Care**

Driveline exit site should be clean, dry, and covered with a sterile dressing at all times. Follow strict aseptic techniques every time the bandage is changed. Wash the driveline exit site daily using the provider-prescribed cleanser. Apply a sterile gauze bandage to the driveline exit site every time after cleaning it.

The timing of dressing changes is device and institution specific but should occur at a minimum of daily for non-transparent dressings, at least weekly for transparent dressings, and whenever the dressing is soiled, wet, torn, or loose.

Wash your hands before and after every bandage change and never put ointments or creams on the driveline exit site. Try to not pull on or move the driveline that goes through the skin. Ensure patient wears the stabilization belt (or other abdominal binder) at all times to keep the driveline secure.

Check the driveline exit site daily for signs of infection, including

- Redness,
- Swelling,
- Drainage or bleeding,
- Unpleasant odor, and
- Signs of fever, fatigue, or generally feeling unwell.

## **Showering with an LVAD**

The patient may be able to shower, but only after the exit site has healed and if the provider gives permission. Keep the following restrictions in mind for LVAD patients.

- Patients should not shower without physician's approval.
- Patients must use the provided LVAD shower bag for every shower.
- Do not submerge the LVAD shower bag in water.
- Keep the system controller dry at all times.
- The system controller or batteries must never be exposed to water.

- The patient should shower only while on battery power, never when the LVAD is connected to the power module.
- Patients cannot swim or take tub baths (including using hot tubs) while the LVAD is in place.
- Immersion in water will cause the pump to stop.

### **Physical Rehabilitation for LVAD patients<sup>13</sup>**

LVAD Patients are at higher risk for complications from infection, depression, anxiety, embolic events, and therefore require significant coordination of care and services.

### **Rehabilitation Goals for LVAD Patients**

Nurses should assess the patients' durable medical equipment needs,<sup>13</sup> and ensure that a home safety evaluation is performed.

They also should help patients work towards the goals of

- Learning the cardiopulmonary rehabilitation techniques of diaphragmatic breathing, pursed-lip breathing, and energy conservation;
- Improving performance of activities of daily living (ADL);
- Increasing balance; and
- Increasing independence.

### **PC and End-of-life Consultation<sup>14,15</sup>**

Professional society guidelines recommend LVAD candidates have a PC consultation during their evaluation in order to

- Define care goals,
- Discuss caregiver availability and burden,
- Cover procedure risks and benefits,
- Review potential problems,
- Ensure patients with destination therapy LVADs know eventually they will die with the device, and
- Discuss end-of-life (EOL) wishes.

Nurses also need to keep the following points in mind when caring for these patients.

- Device discontinuation or deactivation is an option and not an uncommon one during the EOL period.
- Patient preferences may change after initial consent and with illness progression.
- Discussions about care goals should continue throughout the LVAD trajectory.
- Ongoing care plan meetings are necessary.

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## SECTION 5

### CARE TRANSITIONS AND END-OF-LIFE ISSUES FOR HF PATIENTS

#### Care Transitions: Hospital to SNF/LTC

Care transitions are optimized when clinicians prepare patients and their caregivers for the next care setting. Effective transitional care interventions can improve outcomes, decrease costs and length of stay, and help prevent readmissions.

Effective transitional care requires actions designed to achieve continuity of care for HF patients.<sup>1</sup> Such care requires that providers have information about the patient's

- Clinical status,
- Anticipated clinical changes during the transitional period,
- Medical management goals,
- GDMT,
- Goals and preferences,
- Logistical arrangements, and
- Educational needs.

#### Communication<sup>2</sup>

For this transition, communication among the involved parties is essential and should include information about the patient's clinical data, events during hospitalization, and a care plan for the first 30 days after hospitalization.

##### Clinical data

- LVEF
- NYHA functional class
- Echocardiogram results
- Type of HF (HFpEF vs. HFrEF)
- Vital signs
- Lab values (BUN, creatinine, potassium, sodium, glucose, and hematocrit)

- Discharge weight, goal weight, and weight trajectory including volume status and volume treatment
- Physical exam findings (Breath sounds, regular vs., irregular heart sounds, JVP, abdominal distention, and edema)

#### Events during hospitalization

- Response or lack of response to therapy
- Patient cognition (delirium or dementia)
- Adverse events or reactions
- Deviations from chronic home management
- Family/patient decisions about treatment plan
- Weight fluctuations and ideal weight goals

#### Care plan for the first 30 days after hospitalization

- Follow-up laboratory tests
- Patient specific management recommendations

### **Preventing Avoidable Readmissions**

HF ranks among the most frequent diagnoses for all-cause readmission rates.<sup>1</sup> Strategies that can help reduce hospital readmission and promote safe patient transfer from one level of care to another include

- Strong community partnerships,
- Multidisciplinary involvement,
- Timely discharge summary completion,
- Comprehensive medication reconciliation , and
- Identification of high-risk patients.<sup>2</sup>

Polypharmacy and inappropriate medication use occurring during care transitions can place HF patients at high risk for adverse drug events and hospital readmissions. Medication reconciliation should occur at each patient transition point (admission, discharge, and changes in care level)

and should include a review of discharge medications by comparing them to those received on admission. All medications should be evaluated for

- Appropriateness,
- Dosing,
- Therapeutic duplications,
- Omissions, and
- Interactions.

HF is one of the most prevalent chronic conditions in SNF/LTC facilities and its clinical features include breathlessness, cognitive impairment, functional decline, and co-morbid conditions (renal failure, COPD diabetes).

Using evidence-based HF guidelines in SNF/LTC can help improve patient outcomes, symptom management, and patient and family satisfaction. SNF/LTC staff caring for HF patients can help improve outcomes by having sufficient knowledge of the HF diagnosis and the ability to

- Understand dietary restrictions of sodium and fluid,
- Recognize early signs and symptoms of HF exacerbation,
- Create individualized care plans, and
- Educate patients and families.

HF Monitoring and interventions include the following actions:

- Assisting patients with ADL,
- Taking regular weights and blood pressure measurements,
- Providing medications and oxygen as ordered,
- Assisting with exercises as ordered,
- Restricting dietary sodium and fluids, and
- Having communication when changes in condition occur, including weights and diuretic use.

## **Staff Education**

Education of SNF staff should be required training for nursing assistants. Nurses, providers, and other professional staff should receive more advanced HF education. Education should be presented on appropriate level of the learner and include HF physiology, common medications, and signs and symptoms of fluid retention and reduced cardiac output.

### *HF physiology*

- Circulation and heart structure
- Fluid overload
- Pulmonary, cardiovascular, and renal systems

### Common HF medications

- ACEI/ARB/ARNi
- Beta Blockers
- Mineralocorticoid receptor antagonist
- Diuretics
- Digoxin
- Aspirin/warfarin
- Novel oral anticoagulants (NOACs; apixaban, rivaroxaban, darexaban, and edoxaban), direct thrombin inhibitors (dabigatran)

### Signs and symptoms of fluid retention

- Edema
- Abnormal lung sounds
- Cough, especially when lying down
- Dyspnea, orthopnea, and paroxysmal nocturnal dyspnea
- Jugular vein distention
- Sleep disturbance
- Poor appetite
- Nocturnal shortness of breath
- Fatigue

Signs and symptoms of decreased cardiac output

- Hypotension
- Bradycardia or tachycardia
- Weak and diminished peripheral pulses
- Irregular pulse
- Palpitations
- Hypoxia
- Dyspnea
- Fatigue
- Oliguria or anuria
- Decreased organ and tissue perfusion
- Adventitious breath sounds like crackles and orthopnea
- Reduced circulation to extremities, abdomen, kidneys, heart, or brain

### **Knowledge of Implantable Cardiac Devices**

Caregivers should be familiar with pacemakers, CRT-P, ICDs, and LVADs and know the following for each device:

- Its purpose,
- How to identify problems,
- How to turn it off, and
- Required laboratory tests.

Nurses also need to be aware of the patient's discharge plan and education along with proper weighing procedures, when to notify the charge nurse, and when to notify the healthcare provider.

Adhere to the following proper weighing procedures:

- Weigh at the same time of the day,
- Have patient void prior to weight,
- Have patient wear the same clothes, and

- Obtain the same type of weight (standing, wheelchair, or bed).

Notify the charge nurse when the patient experiences

- Weight gain,
- Edema,
- Shortness of breath, or
- A change in vital signs.

Notify the healthcare provider when the patient experiences

- A five-pound weight gain since discharge,
- Bulging neck veins,
- Lower extremity or sacral edema, or
- Increased respiratory effort.

#### **Identifying the Need for End-of-Life Care in SNF/LTC Setting<sup>4</sup>**

HF is unpredictable and can have sudden exacerbations. These facts make timing end-of-life discussions challenging. As HF patient's cognitive and functional status decline, it affects their ability to communicate. PC services can help patients and families in these situations.

#### **Palliative Care<sup>5</sup>**

Palliative care (PC) is an approach to care that provides relief from suffering and distressing symptoms and supports QOL for those dealing with life-limiting, chronic illnesses like HF. PC services can be used throughout the course of care for patients with life-limiting illnesses.

Distressing HF issues that affect patient QOL include

- Pain,
- Dyspnea,
- Fatigue,
- Weakness,
- Nausea,
- Anorexia,
- Constipation,

- Altered mental status,
- Depression,
- Anxiety,
- Insomnia, and
- Spiritual distress.

PC services can help

- Reduce symptom burden;
- Improve QOL;
- Identify goals of care (GOC);
- Improve advanced care planning;
- Improve patient and caregiver satisfaction;
- Reduce resource use;
- Increase communication between patients, families, and care teams; and
- Alignment treatment with patient's goals.

### **When is the Right Time for Palliative Care?**<sup>6</sup>

PC is appropriate for all patients facing a difficult diagnosis or illness course, independent of their prognosis. Consider the Surprise Question (SQ), “Would you be surprised if this patient died in the next year?” Reflect on whether death in the coming year is *possible* rather than *probable*. The SQ is not a prognostic tool, rather a screening test for patients who might benefit from a palliative approach.

### **Basic Symptom Management Tools**<sup>7</sup>

Pain

- Less recognized pain signs include facial grimace, calls for help, combativeness during personal care, or restlessness at night.
- Consider scheduling Tylenol 650–1000mg TID, as it is helpful and has fewer side effects.
- Opioids should be considered for moderate to severe pain that is refractory to non-opioids.
- Adjutants for pain include heat, ice, and topical creams (avoid patches).

## Dyspnea

- This symptom can be experienced independent of oxygen status.
- Dyspnea can be disabling and anxiety provoking.
- Seek maintenance of euvolemia through diuretics and fluid and sodium restrictions.
- Try aiming a fan at the patient's face.
- Provide oxygen for hypoxemia (consider tent, nasal cannula [NC], and limit masks).
- Consider low-dose opioids as they augment endogenous endorphins (e.g., oxycodone 1–5mg or hydromorphone 0.05mg).
- Benzodiazepines may reduce dyspnea-related anxiety.
- Encourage patients to try relaxation techniques.

## Constipation

- This is a common problem in HF patients.
- Constipation can result in anorexia and confusion.
- Monitoring patients' bowel movements is important.
- Encourage patient to eat high-fiber foods, vegetables, fruits, and whole grains.
- Use laxatives such as Senna (8.6mg), regular dosing with magnesium, or polyethylene glycol.

## Anxiety

- Anxiety can be related to pain or constipation.
- Anxiety can be treated with antidepressants
- Encourage patient to seek spiritual support and attend support groups.
- Educate patient about HF.
- Consider short-acting benzodiazepines if non-pharmacologic therapies fail.

## Depression

- Depression can cause anxiety.
- Antidepressants can be helpful in alleviating depression.

- Citalopram (10-20mg daily) generally is well tolerated by patients with an onset of one to two weeks or longer (monitor volume status, and QT interval).
- Consider methylphenidate with patients who have an onset of one to two days.
- Use benzodiazepines cautiously, as they may increase confusion or cause falls.

#### Insomnia

- Try to determine and treat the underlying cause (e.g., fluid retention).
- Ensure pain and anxiety are addressed.
- Assess patient's sleep hygiene (i.e., have them avoid caffeine, alcohol, or excess fluid in the evening hours).
- Anticholinergics are not recommended, as Benadryl or amitriptyline may cause constipation, confusion, or falls.
- Zolpidem is not recommended.
- Trial of low dose Trazodone (25-50mg HS), as it has fewer side effects than do other drugs.
- Consider providing nocturnal oxygen.

### **Goals of Care (GOC) Communication**

Communicating about GOC is a low-risk, high-value intervention that ideally should occur before a crisis. Early in the course of life-limiting illnesses, communicate with stakeholders to define the GOCs for an individual, and then identify options and choose interventions that meet the GOCs. GOCs should be set in the light of the patient's clinical condition, and be reevaluated after decompensation, stabilization, and adverse events. Remember the saying, hope for the best, but plan for the worst.

Use a systematic approach to the GOC conversation using the following guidelines:

- Identify patients in need of GOC;
- Develop criteria for appropriate timing of initial GOC;
- Use simple, clear language;
- Avoid euphemisms;
- Define medical or technical terms; and

- Educate patients and families about HF and GOC.

### **Conversation Guide**

Use the questions and strategies provided below when talking with patients about GOC.

- What is your understanding of your illness?
- How much information about what is likely ahead would you like?
- If your health worsens, what are your most important goals?
- What are your biggest fears about your future health?
- How much are you willing to go through for the possibility of gaining more time?
- Share prognosis tailored to patient preferences.
- Ask the patient to explain back what was discussed.
- Give the patient time to ask questions.

### **Advanced Care Planning**

All HF patients should have a plan for emergencies. This decision includes allowing a natural death or attempting resuscitation. Resuscitation techniques should be reviewed, but not presented as menu options. Instead, discuss the idea of resuscitation more globally as a philosophy of care. When a patient prefers an attempt at CPR, clarify under what circumstances the patient would not want prolonged life support.

The default intervention is CPR for those who do not select a preference. For those patients who do not want to consider the topic, they should be asked to designate a proxy to make decisions on their behalf. This proxy or durable power of attorney assigns one or more persons to make healthcare decisions for the patient should they lose capacity for medical decision-making.

### **Poor Prognostic Indicators in HF Patients**

- Advanced age
- Refractory symptoms despite optimal therapy
- Two or more hospitalization in <6 months
- Dependent on others for three or more ADL
- Resistant hyponatremia

- Cardiac cachexia

### **End-of-Life Issues**

HF patients are at risk for rapid clinical deterioration or SCD. As HF progresses, planning for EOL becomes important, especially for patients who have declined or are ineligible for advanced therapies. Many HF patients and their families are unaware of the life-limiting potential of HF.

Treatment of volume overload can improve function, even toward the EOL. HF medications and volume management are appropriate until medications are limited by a patient's decreased oral intake, inability to swallow, or hypotension.

### **End-of-Life Indicators**

- NYHA class III or IV
- Care team can answer *No* to the SQ
- Difficult physical or psychological symptoms despite optimal tolerated therapy
- Repeated hospital admission with HF symptoms

### **Turning Off Implantable Cardioverter defibrillator (ICD) Devices or Pacemakers**

- SNF/LTC intake history should include evaluation for the presence of ICD and/or pacemaker to include current settings.
- ICDs reduce mortality rates in mild to moderate systolic HF.
- The value of ICDs in advanced HF is unproven and not indicated for patients with an expected survival of less than a year with an acceptable functional status.
- Patients should understand the option to deactivate the defibrillator at the EOL in order to avoid unwanted, painful shocks.
- Patients may request deactivation of a pacemaker, as it does not prolong the dying process.

### **Advance Directives**

An advance directive is legal documentation of a patient's goals and care preferences. Most states have their own advance directive document, which is valid only in that state.

### **Durable Power of Attorney for Healthcare or Healthcare Proxy (DPOA-HC)**

These documents assign one or more persons to make healthcare decisions for the patient should they lose capacity. The type of form is set by State statute or law.

### **Living Will**

This document is a statement of preferences for care in future situations. The language in these documents varies by state. Living wills may require two physicians to declare a patient as terminally ill. This document usually specifies patients' preferences for or against life-prolonging treatments (i.e., ventilation, hydration, or nutrition).

### **Five Wishes**

Five Wishes is an easy-to-use legal advance directive document written in everyday language. It's available online at <https://fivewishes.org/> and can serve as a legal advance directive in 42 states. Even if it's not legal in a state, Five Wishes still can provide guidance as it includes DPOA-HC/HP and preferences for types of treatment, level of comfort, and information for loved ones.

### **Physician Order for Life-Sustaining Treatments (POLST)**

A POLST is a transportable order for emergency care. The document stipulates whether CPR should be initiated, if the patient is to be transported to hospital, and the intensity of interventions desired. The POLST stays with the patient and is to be followed wherever the patient is living or receiving healthcare.

### **Transition to Hospice Care**

Hospice is an insurance benefit for patients with a life expectancy <6 months. Hospice referral should be considered in patients with advanced HF who have recurrent HF hospitalizations, worsening functional status, a need for continuous intravenous inotrope therapy. Hospice care can be provided in the patient's home, nursing home/SNF/LTC, a hospice facility, or specialty hospice units.

## **Hospice co-management in the SNF/LTC**

SNF/LTC facilities can have contractual agreements with community hospice agencies. Patients can receive two layers of care: care from the SNF staff and from hospice agency staff. SNF/LTC staff can provide expertise in HF management while hospice agency can provide EOL care and bereavement services.

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## SECTION 6

### PALLIATIVE CARE FOR HF PATIENTS

#### **What is Palliative Care?**

PC focuses on a holistic approach to end-of-life care and provides an extra layer of support for the patient, family, and caregivers.<sup>1</sup> PC includes the following crucial aspects of holistic patient care:<sup>1-4</sup>

- HF education for patients, family members, and caregivers;
- Aggressive symptom management;
- Management of comorbidities;
- Psychological assessment and treatment;
- Social and financial assessment and referrals; and
- Spiritual support.

In PC, emphasis is placed on comprehensive needs assessment of patients and caregivers including physical, intellectual, emotional, social, cultural, and spiritual needs.<sup>2</sup> Symptom management expertise is provided in collaboration with a multi-disciplinary care team.<sup>3</sup> The benefits of palliation are envisioned throughout the illness continuum.

#### **Palliative Care Goals<sup>1-4</sup>**

PC is offered to ease symptoms without curing the underlying disease process. The expected outcomes of PC are providing relief of distressing symptoms, easing pain, and enhancing QOL.<sup>1,3</sup> Care goals for patients in NYHA Class I-II focus on symptom recognition, symptom management, and promotion of self-management. Care goals for NYHA Class III-IV focus on alleviating physical discomfort, offering emotional and spiritual support, and enhancing QOL.

#### **Who Should Be Considered for Palliative Care?**

Patients experiencing the following symptoms or situations should be considered for PC:

- Distressing symptoms (emotional, physical, or psychosocial);
- Multiple emergency department visits and repeated hospital admissions;<sup>1</sup>
- Ongoing crises;

- Progressive dependence on others;
- Increasing illness burden;
- Feelings of uncertainty about what the future holds (“What are my options?”);
- Patient and family are discerning GOC;
- Life-threatening or debilitating illness course with no reversible cause;<sup>1</sup> and
- LVAD destination therapy.

### **Palliative Care and HF Patients?**

Because disease management efforts begin as soon as a patient receives an HF diagnosis, it is appropriate to offer PC and discuss care goals with these patients during any stage of the disease, regardless of the patient’s age.<sup>1</sup> Engaging patients in PC discussions early can help them make informed decisions about their care. For NYHA Class I-II patients, discussions include disease progression, prognosis, advance care planning, and optimization of medical management. In addition to optimized medical management, NYHA class III-IV patients with recurrent hospitalizations and increasing symptom burden may be offered surgical or clinical research options.

PC for HF patients is provided concurrently with disease-modifying therapies and may include

- Beta blockers to slow disease progression and reduce hospitalizations and mortality;<sup>5</sup>
- Diuretics to treat pulmonary edema and palliate shortness of breath;<sup>4</sup> and
- Advanced cardiac therapies (ventricular assist devices).<sup>1</sup>

### **PC Interventions for Symptoms in Patients with Advanced HF<sup>1-4</sup>**

Patients with advanced HF may need palliation for anorexia, anxiety, depression, dyspnea, edema, fatigue, and pain. Interventions for these symptoms are discussed below.

For anorexia, offer dietary referral for meal planning, encourage favorite foods, offer small frequent meals, provide oxygen by NC with meals, encourage rest before and after meals, and provide appetite stimulants.

For anxiety, offer relaxation, distraction, meditation, and reinforcement of intrinsic coping skills; stress reduction; and cognitive behavioral therapy.

Because depression often is related to disease state and QOL, offer psychological support, stress reduction, psychotherapy, individually tailored exercise/physical activity, and carefully selected pharmacologic antidepressants.

For dyspnea, facilitate circulating air with a fan or open window, provide oxygen for hypoxia, reposition patient to elevate head and chest, limit dietary sodium and restrict fluids, and administer diuretics as ordered while monitoring these medications for effectiveness.

For edema, limit dietary sodium and fluids, elevate the patient's legs, suggest periods of rest in a recumbent/reclining position, use compression stockings or ACE wraps, and start or increase diuretics when appropriate.

For fatigue, identify and treat anemia and encourage physical/occupational therapy, cardiac rehabilitation, a balance of rest and activity for energy conservation, meditation, breathing retraining, and assistive devices for ambulation.

For anginal pain, encourage patient to conserve energy, avoid angina-provoking activities, and administer nitrates, anti-anginals, and opioids as ordered. For musculoskeletal pain, elevate affected extremity and use heat, cold, massage, and compression. In addition, use Acetaminophen, intra-articular joint injection, and capsaicin cream as ordered while avoiding NSAIDs, COX-2 inhibitors, and steroids.

### **When is Hospice Referral Appropriate?<sup>4</sup>**

Hospice care is offered in the setting of a poor response to maximal, optimal medical and/or surgical interventions and is a form of PC. It is appropriate to transition the patient into hospice care during the terminal-care phase when life expectancy is approximately six months. Prognostic markers used to identify end-stage HF include NYHA Functional Class

IV, older age, persistent resting tachycardia, reduced serum sodium, escalating diuretic dose, or multiple recent ED visits or hospitalizations.<sup>1</sup>

Other prognostic markers to determine end-stage HF are

- Significantly elevated BNP or NT-proBNP,
- Elevated BUN/creatinine,
- Hypoalbuminemia,
- Low blood pressure and intolerance to HF guideline medications,
- Functional decline,
- No symptom improvement after hospitalizations,
- Increasing hours of sleep,
- Stage D HF,
- Cardiac cachexia, and
- Anorexia.

Persistent, incurable complications associated with VAD therapy include

- Infection requiring antibiotics and aggressive wound care,
- GI bleeding,
- Right HF, and
- Arrhythmias that are not a VAD complication.

### **Nurses' Role in Caring for HF Patients Receiving PC<sup>4,6</sup>**

Nurses are instrumental in providing appropriate satisfying care for these fragile patients. Their role includes

- Providing education to patients and family/caregivers for self-care/symptom management;
- Providing personalized care that allows for the development of trusting relationships;
- Validating patient and family concerns (physical, emotional, psychosocial, and spiritual);<sup>6</sup>
- Building rapport and being approachable in order to reinforce the therapeutic relationship;

- Providing factual information to promote coping skills, confidence, and decision-making;
- Showing respect for the patient, family and caregiver by collaborating with PC team providers;
- Supporting patients, family and caregivers with nursing presence during care transitions;
- Preventing care gaps during care transition through patient advocacy and communicating patient and family needs to all providers;
- Facilitating effective grieving; and
- Providing bereavement support.<sup>4</sup>

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